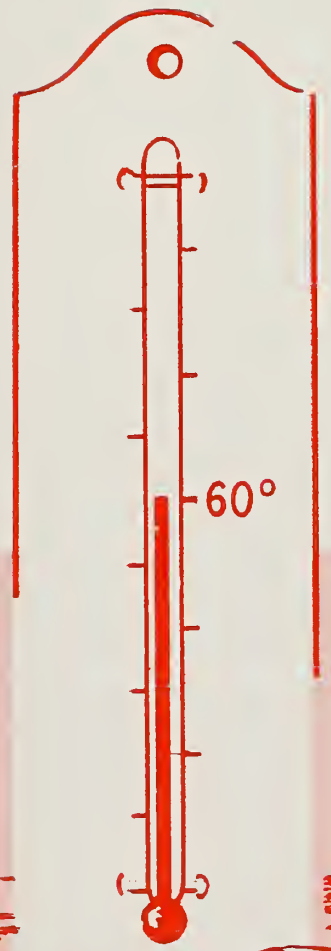
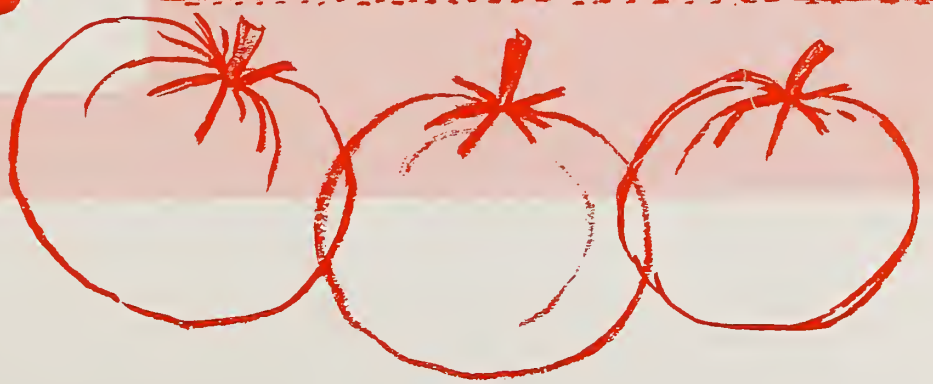
PA–290

July 1956

Shipping Temperatures for Tomatoes



Avoid Chilling in Transit... Moderate Temperatures Will Pay Dividends



U. S. DEPARTMENT OF AGRICULTURE

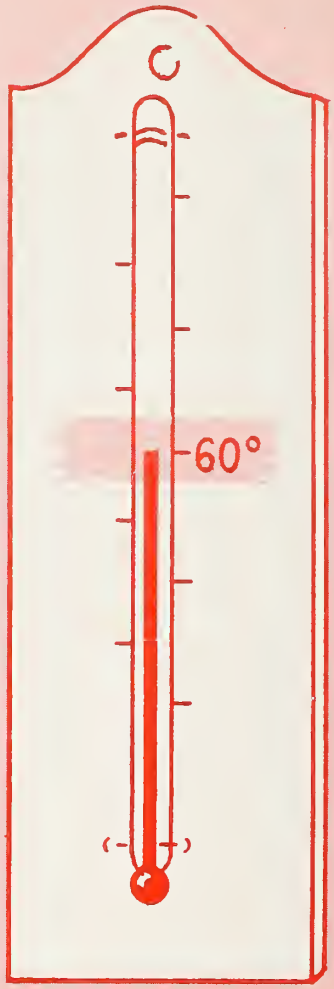
Agricultural Marketing Service

"Not Too Hot – Not Too Cold"

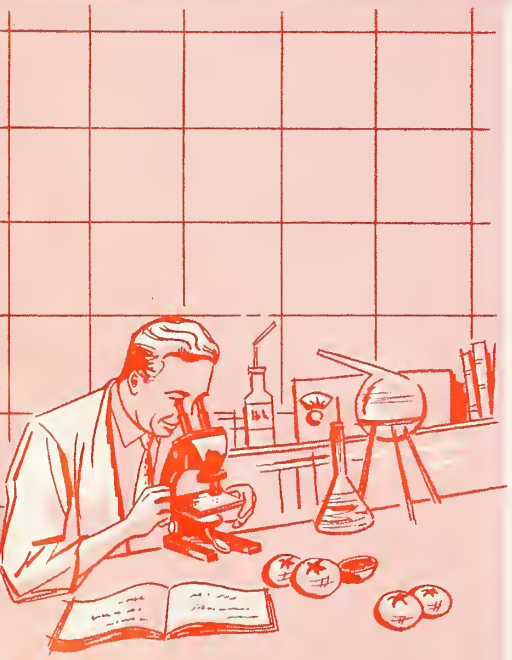
The most decay and poorest ripening occur in tomatoes that have been chilled at temperatures below 50° F.

BEST RESULTS ARE OBTAINED WHEN TEMPERATURES ARE KEPT BETWEEN 55° AND 65°.

Excessive field heat should be removed quickly, but tomatoes should not be overiced.



Temperatures Below 50° Increase Decay Instead of Preventing It

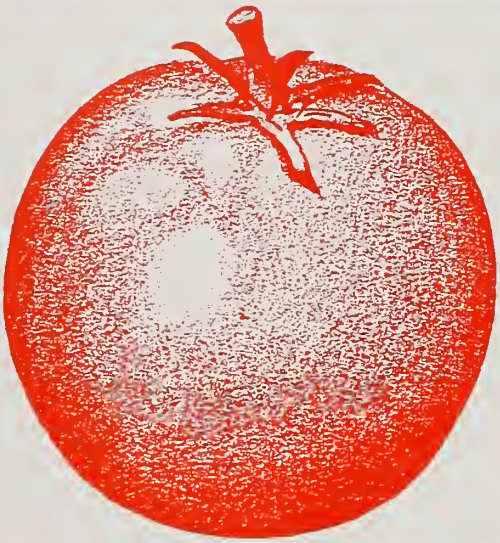


The lower the temperature and the longer the time below 50° F., the more decay, Agricultural Marketing Service studies have shown.

Most of the decay of tomatoes injured by low temperatures is caused by a fungus, *Alternaria tenuis*. This fungus ordinarily will not rot tomatoes that have been kept at moderate temperatures.

The researchers studied the fungus damage at different temperatures. They put some of the fungus into fresh wounds of each tomato. These tomatoes were then kept at 32°, 40°, 50°, 55°, 60°, or 70° F. for 14 days. Each lot was then held at 60° for an additional 14 days. Alternaria rot developed only in the tomatoes that had been held below 50°.

Handle your tomatoes just right and you can avoid damage from chilling. Mild chilling injury does not show in transit or on arrival but it shows up later in ripening with more culls and less "pack out." Whoever gets the shipment gets bad tomatoes.



BEWARE OF HOLDING TOMATOES BELOW 50° F.

Handle your tomatoes right and they'll ripen a beautiful red color. Low temperatures causes slow, uneven ripening and extensive decay.

Ship Mature Tomatoes at Moderate Temperatures

The secret of improving quality and appearance, and of reducing losses, is in shipping reasonably mature tomatoes and keeping them, at all times, at moderate temperatures.

Experiments conducted by the Agricultural Marketing Service in cooperation with the California Experiment Station show that moderate temperatures (55° to 65°) save handling costs. More tomatoes are ripe enough for marketing on arrival—the increase is from 2 to 4 fold—and the remainder ripen in a relatively short time. A greater volume of tomatoes can be handled, and increased "pack out" is assured because there are fewer dark scars and less decay.

More Profit from Moderate Shipping Temperatures

Ice Requirements

Best results were obtained by using only enough initial ice in car bunkers to reduce the temperature of the tomatoes to 55°, and by keeping the car vents closed.

The icing requirements for shipping fall-grown tomatoes from California to eastern markets are shown below. For different areas of production and different seasons the icing requirements listed here should, of course, be modified.

Average temperature of fruit when loaded	Initial ice for cars shipped with vents closed
Above 80° F.	2½ tons in each bunker (full)
Between 75° and 80°	2 tons in each bunker
Between 65° and 75°	1½ tons in each bunker*
Between 60° and 65°	1 ton in each bunker*
Between 55° and 60°	½ ton in each bunker*
Between 50° and 55°	None

* On half-stage racks

A light re-icing at one-half to 1 ton in each bunker may be desirable for long distance shipments in unseasonably warm weather. Moderate temperatures can best be maintained in cars equipped with fans.

For further information write to Agricultural Marketing Service, Quality Maintenance and Improvement Section, Plant Industry Station, Beltsville, Md.

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